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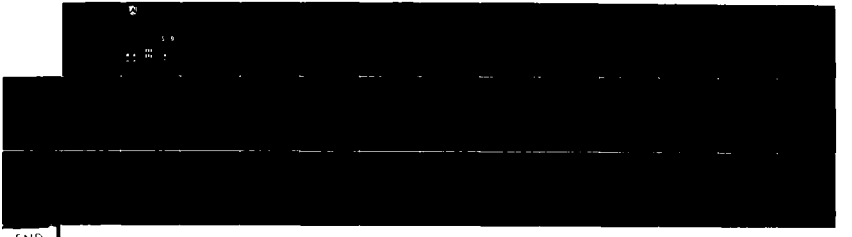

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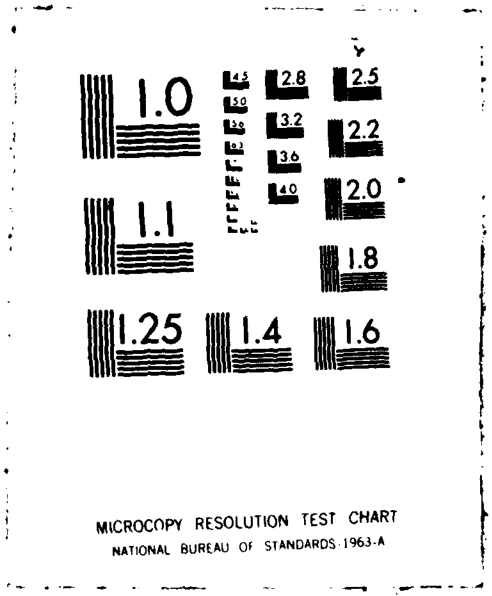
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AIR WAR COLLEGE

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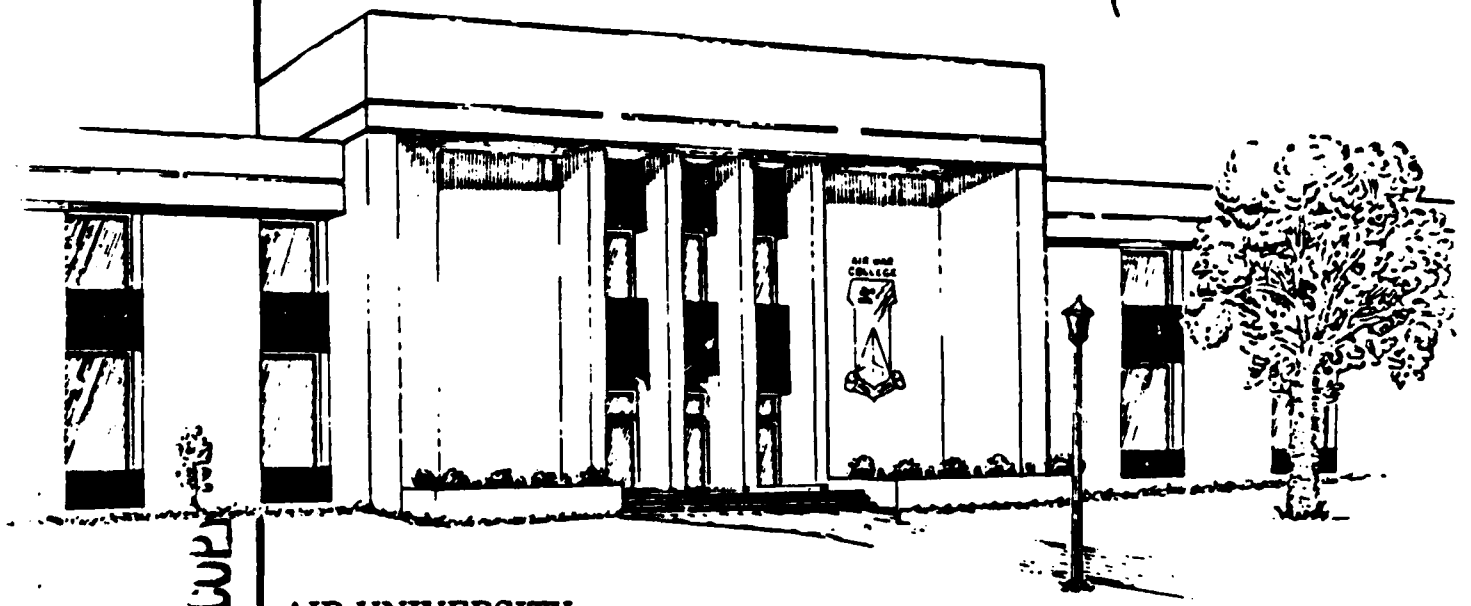
RESEARCH REPORT

No. AU-AWC-86-224

AD-A178 025

PILOT SELECTION FOR THE AIR NATIONAL GUARD

By LT COL STEVEN WESTGATE



AIR UNIVERSITY
UNITED STATES AIR FORCE
MAXWELL AIR FORCE BASE, ALABAMA

AIR WAR COLLEGE
AIR UNIVERSITY

PILOT SELECTION FOR THE AIR NATIONAL GUARD

by

Steven Westgate
Lieutenant Colonel, ANG

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE RESEARCH

REQUIREMENT

Research Advisor: Colonel James C. Poole

MAXWELL AIR FORCE BASE, ALABAMA

March 1986

DISCLAIMER-ABSTAINER

This research report represents the views of the author and does not necessarily reflect the official opinion of the Air War College or the Department of the Air Force.

AIR WAR COLLEGE RESEARCH REPORT ABSTRACT

TITLE: Pilot Selection for the Air National Guard

AUTHOR: Steven Westgate, Lieutenant Colonel, ANG

The selection of successful pilot candidates to attend USAF Undergraduate Pilot Training is important because of the high cost of this training and the criticality of the career. The actual selection of candidates is slightly different by each branch of the Air Force, but should be understood by Air National Guard commanders. Guidance to the 91 flying units of the Guard from the National Guard Bureau is administrative in nature. Seven options are suggested to aid commanders in selecting the best candidates for pilot training.

BIOGRAPHICAL SKETCH

Lieutenant Colonel Steven Westgate (B.A., Rollins College) joined the Georgia Air National Guard in 1969 and attended USAF Undergraduate Pilot Training. He has been involved in operational matters of the unit's airlift mission since graduation from pilot training and has been particularly interested in pilot selection. He has over 4800 hours flying the C-124 and C-130 transports on worldwide missions. Lieutenant Colonel Westgate is a graduate of the Air War College, class of 1986.

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Chapter I

INTRODUCTION

Air National Guard (ANG) quotas for United States Air Force (USAF) Undergraduate Pilot Training (UPT) have declined over the past few years and are expected to decline further in the near future. As costs increase and quotas diminish, it is imperative that the ANG optimize the use of all available UPT allocations. Current guidance to the ninety-one flying units of the ANG for pilot selection is primarily administrative in nature. ANG eligibility standards have paralleled those of the USAF, except where educational waivers are concerned. Units very often are required to select a candidate from a pool of qualified applicants. There is no standardized guidance in this area; therefore, the various units use different methods of selection. It may be accomplished by the unit commander, the deputy commander of operations or a board. This paper traces the history of USAF pilot training, reviews the current UPT program, outlines present selection criteria and finally considers Air National Guard options for future pilot trainee selections.

CHAPTER II

HISTORY OF PILOT SELECTION

Orville and Wilbur Wright first flew their aircraft in December 1903. However, there was much skepticism about aviation, and it was not until 1909 that the United States Army contracted with the Wright brothers for an aircraft and flying lessons. Two officers, Lt Frank P. Lahm and Lt Frederic E. Humphreys, were selected to become the first military airplane pilots, with acceptance tests and training conducted near College Park, Maryland. Lt Benjamin D. Foulois arrived near the completion of this endeavor and on 5 November 1909 Lt Foulois was training for his first solo flight when the aircraft was damaged during landing with Lahm and Humphreys on board. The Army reassigned Lt's Lahm and Humphreys to ground duties and ordered Lt Foulois to ship the aircraft, Signal Corps Airplane Number 1, to Fort Sam Houston, Texas where he was to teach himself how to fly. (1:15-16)

Lt Foulois soloed on 2 March 1910 and continued to experiment with the aircraft. Because the Army and the public maintained their skepticism of aviation until the outbreak of World War I only 65 pilots at five Army flying schools, were trained by the time the United States entered the war. The demand for pilots rose almost immediately and pilot training became a top priority as both the U.S. and the Allies moved to fill the gap. U.S. flying

schools were established in England, France and Italy and by the end of the war had trained 1674 pilots to fly and fight. (2:177)

Explicit guidelines for the selection of trainees and for American pilot training did not exist, however several general observations were noted that served as a basis for the future:

1. Desire and morale of the student was an excellent indicator for success in pilot training.

2. Enlisted men of proven character and performance did well. The practice of awarding wings and commissions upon graduation sprung from this period.

3. Carefully chosen commanders and instructors were of utmost importance to ensure a successful program.

4. Better results were achieved by treating students as men and not as children during their training. (3:93-115)

The emphasis on training large numbers of pilots disappeared as the war drew to a close and the Army was able to return to peacetime operations. During the interim years between World War I and World War II the Army was able to be highly selective when considering men for pilot training. A candidate had to have two years of college and pass both a written exam and a physical examination including an interview by an

aviation medical examiner. (5:1) With the outbreak of war in Europe in 1939, the selection procedures again received increased attention.

Thousands of pilots had to be trained for the war effort and selection methods were modified to accommodate this new demand. The Army Air Forces studied several proposals during this period in search of the best method to select people for training. The Office of the Air Surgeon developed the aviation cadet qualifying examination that was adopted on 15 January 1942. It was a three hour written examination that was administered extensively during the war. A problem arose when more people passed the exam than could be sent to training, dictating a more sophisticated classification battery to further screen applicants. It consisted of written and apparatus tests to measure mental and psychomotor abilities. The product of the examination was a stanine score, derived from a "standard score, nine point scale". The scores ranged from one to nine, with one being low and nine being high with passing scores determined according to the needs of each service. (5:10)

In the years following the war, the aviation cadet qualifying test and the aircrew classification battery were modified and revalidated in an effort to stabilize operations on a peacetime scale. The present examination, the Air Force Officer Qualifying Test (AFOQT), was a modification that was adopted in 1951 and it also has been updated several times over the years.

Since this 1950s it has been a mainstay of the qualification process, even though qualification scores have fluctuated.

The method of pilot training has changed between two methods over the years. In the first method candidates were trained in single engine aircraft during the primary phase. At the completion of primary, classes were divided according to the type of aircraft they would eventually fly. The advanced phase consisted of either single seat training or crew force/large multiengine aircraft training. This dual track system was ended in the late fifties as the B-25s that were used in crew force training went out of the inventory. (6:14) The concept since the early 1960's has been to produce a universally assignable pilot trained in fighter type jet aircraft.

The concept of the aviation cadet program, whereby an individual was both commissioned and awarded pilot wings upon completion of pilot training, was terminated at about the time jets were starting to be used by Air Training Command. All pilot candidates after that time have been commissioned prior to entering training. The aircraft used for pilot training at the present are the T-37 and the T-38. When required, candidates attend the T-41 course at the USAF Flight Screening Facility at Hondo, Texas for 14 hours of flying which takes about 16 days to complete. If a candidate has a valid Private Pilots License (PPL), then he bypasses the T-41 screening and

proceeds directly to the T-37 phase and then the T-38 phase. Candidates receive their pilot wings upon completion of the 49 week course.

CHAPTER III

CURRENT PILOT TRAINING

Air Training Command has overall responsibility for the program for USAF fixed wing pilot training. Undergraduate Pilot Training (UPT) is an intense 49 week flying training program designed to train pilots for the USAF and the Air Reserve Forces (ARF). UPT is presently conducted at the following locations: Columbus AFB, Mississippi; Laughlin AFB, Texas; Reese AFB, Texas; Vance AFB, Oklahoma; and Williams AFB, Arizona.

In-processing and briefings comprise the first few weeks at UPT. The average UPT class contains approximately 60 students who are divided into two equal sections to facilitate training throughout the course. One section will accomplish ground requirements in the morning and flying requirements in the afternoon with the other section on the reverse schedule. Each week the sections rotate schedules which affords the students opportunities to fly at different times and during varying climatic conditions. Academic courses include airmanship, physiological training, aircraft systems, navigation and weather to name a few. Generally the courses are conducted prior to their application on the flight line.

Instructor pilots are assigned two or three students for each of the two phases of flying training. The primary phase is accomplished in the twin

engine side by side seating T-37 jet aircraft and consists of contact, instrument, formation and navigation flights totaling about 80 hours of actual flying time. By the end of the primary phase the successful student has soloed, completed several check rides, and gained confidence in his flying abilities.

The advanced phase is conducted flying the high performance tandem seated T-38. The same sort of instruction is accomplished here with the student logging about 100 hours of flying time. Toward the end of this phase, students are recommended for follow on training by an Advanced Training Recommendation Board (ATRB) at their UPT base.

The ATRB is chaired by each UPT wing deputy commander for operations and includes instructors and others familiar with each students' progress. The board considers flying, academic and procedural performance, any other pertinent factors and individual recommendations from instructors and supervisors prior to making their recommendation. (7:1)

The board will recommend that the student be assigned to fighter, attack, reconnaissance (FAR) aircraft or to tanker, transport, bomber (TTB) aircraft. The theory behind this recommendation is that some students will be easier to train in FAR aircraft while others are better suited for TTB aircraft. Each UPT graduate is a fully qualified pilot and the ATRB attempts

to assign each graduate to a category of aircraft that will minimize training costs and will accommodate the needs of the Air Force.

Herein lies a potential problem for student pilots that are members of the ARF. An ARF student may hail from a unit equipped with FAR aircraft, but it may be recommended that the student be assigned to TTB only aircraft. The reverse case is not a problem because a FAR recommended graduate may be assigned to either type aircraft. In the previous example, if an ARF student cannot find a TTB unit to accept him, he will be dropped from the program. The ANG has averaged about 180 students in UPT for FY 83 through FY 85. Approximately 10 students from FAR equipped units each year are not FAR recommended. (8)

This recommendation is forwarded to the Air Force Manpower and Personnel Center (AFMPC) during the 42nd week of training for a final decision based on the needs of the service. (6:67) During the final weeks, wing personnel monitor student performance for any factors which may affect the AFMPC decision. Successful students pin on their new USAF pilot wings upon graduation and proceed to survival and transition training for the aircraft they have been assigned to fly. Finally they arrive at the operational unit for which they have been assigned to begin the next phase of their flying career.

There are studies being conducted by the Air Force to determine how pilot training should be conducted in the future. The generalized concept whereby the graduate pilot was universally assignable has been in being since the late 1950's. However, there are serious proposals to return to dual track training or what is now referred to as the specialized undergraduate pilot training (SUPT) method.

Under this method student pilots would all train in the same primary aircraft where a determination can be made regarding the proper track, FAR or TTB, for the basic phase. After primary flying phase is complete, students proceed on the appropriate track where training more applicable to the aircraft of their eventual assignment is provided. In most cases pilots will not be allowed to change tracks in mid career. As of this writing, the aircraft type to be used for the TTB track has not been selected so for the near term basic phase pilot training will continue in the T-38 aircraft.

CHAPTER IV

QUALIFICATION REQUIREMENTS

The qualifications required to enter UPT are generally the same for all USAF and ARF personnel. They are enumerated below, with specific emphasis on ANG requirements.

1. The applicant must have completed and passed a Flying Class I physical.

2. An individual must be less than age 27 1/2 prior to entering UPT.

3. The applicant must achieve the following AFOQT scores:

a. A minimum of 25 percent on the pilot composite and a minimum of 10 percent on the navigator-technical composite with a total score for the two composites of 50 percent.

b. A minimum score of 15 percent on the verbal composite and 10 percent on the quanitative composite.

4. The USAF requires a four year college degree, which may be waived by the ANG. To obtain a waiver the applicant must have completed a minimum of 60 semester or 90 quarter hours of college and meet the grade point average (GPA) denoted in table 1 for the number of college hours attained. Applicants for an education waiver must score a minimum of 30

percent on the verbal composite, 25 percent on the quantitative composite, 50 percent on the pilot composite and 25 percent on the navigator composite. (9:2)

HOURS COMPLETED	MINIMUM GPA
60 semester or 90 quarter hours	2.50
75 semester or 112 quarter hours	2.40
90 semester or 135 quarter hours	2.30
105 semester or 157 quarter hours	2.20
120 semester or 180 quarter hours	2.10

Table I

Air Force Officer Qualifying Test

The AFOQT is developed by the Personnel Research Division of the Air Force Human Resources Laboratory at Brooks AFB, Texas and is used for screening undergraduate flying training applicants and for non-rated officer applicants. It yields scores on a basis of one to 99 percent in the following areas: pilot, navigator, verbal and quantitative. Areas evaluated range from mathematical reasoning and knowledge to mechanical comprehension and general pilotage. It does not yield any psychomotor evaluation. (10:5-9)

Private Pilot's License (PPL)

UPT candidates who possess a valid PPL are exempt from the requirement to attend the T-41 screening program. A PPL may be obtained by enrolling in any Federal Aviation Administration (FAA) certified flying school at many airports throughout the nation. The course of instruction can be quite expensive ($2300) and generally takes several months with the student accumulating approximately 40 hours of flying time. The PPL is awarded upon completion of the course and an FAA check ride.

CHAPTER V

COMMISSIONING PROGRAMS AND UPT

Student input to USAF UPT is from a variety of sources including the USAF, United States Marine Corps and various allies. The selection processes of qualified applicants from the following sources will be addressed herein:

1. USAF Reserve Officer Training Corps (ROTC) detachments located at many colleges and universities.

2. USAF Officer Training School (OTS) located at Lackland AFB, Texas.

3. USAF Academy (USAFA) located at Colorado Springs, Colorado.

4. Active duty members of the USAF.

5. One of the 91 units of the ANG.

Reserve Officer Training Corps

College students may enter ROTC any time prior to their junior year. After completion of a 4 or a 6 week summer training camp, (determined by time of entry into ROTC), and upon graduation, a student receives a Reserve commission in the USAF. Until recently, the individual detachments made pilot candidate selection which meant that there were over 400 different

units making the selections. Pilot candidates are now selected by a central board conducted at ROTC headquarters each month from November through May to provide standardization in the selection process and reduce the attrition of pilot candidates in pilot training. (11:7)

This board is not the last hurdle on the road to entering UPT. A candidate must first complete either the Flight Screening Program (FSP) or the Flight Instruction Program (FIP) or possess a private pilot's license. Flight screening, conducted at the Flight Screening Facility at Hondo, Texas, is a 16 day course consisting generally of ground training, physical training and 14 hours of flying time in the T-41. The ROTC Flight Instruction Program is generally conducted at civilian airfields near the college campus using contract aircraft and instructors. Because the attrition rates at UPT for ROTC students was increasing to unacceptable levels due to non-standard FIP programs,the FIP is being modified to more closely resemble FSP. In the future FIP will be eliminated completely and all ROTC cadets will accomplish their T-41 screening during summer camp at one of several centralized locations. (6:24) As a final step in the process, senior ROTC pilot candidates must pass a stringent medical examination and personal performance reviews before being selected for UPT.

Officer Training School

Officer Training School (OTS) is a 12 week basic course for college graduates seeking to be officers in the USAF. A prospective UPT applicant first talks to a USAF recruiter about attending pilot training. A recruiter will encourage promising candidates if he feels they have the potential to become pilots. He will discourage or eliminate candidates who do not meet required prerequisites. The applicant then is administered the AFOQT. The recruiter then completes a pilot selection opportunity worksheet to further screen candidates. Those who pass this level of screening are interviewed by a USAF officer. There is no standard interview format, so the outcome of the interview varies on a case by case basis. If the officer recommends the applicant for UPT, his package is forwarded to the OTS central selection board. This board rank orders all applications and selects the best for attendance to OTS and then UPT. After selection, the applicant is scheduled for a flight physical as the last factor to determine eligibility for UPT. (12)

United States Air Force Academy

The USAF Academy is a four year military college near Colorado Springs, Colorado, with an enrollment of 4546 cadets. (13:85) The primary

purpose of the Academy is to commission into the USAF career minded officers. The goal of the Academy is for approximately 65 percent of the graduating class to attend UPT. Annually over sixty thousand applicants request Pre-Candidate Questionaires from the Academy's admissions office. After interviews, physical, medical and academic qualifications are screened, only about fifteen hundred applicants are selected for attendance. A cadet enters the Academy knowing if he/she is pilot qualified or not. Medical factors are the most common reason for cadets not being pilot qualified. Cadets must have completed the Pilot Indoctrination Program (PIP) to be considered for UPT. PIP is a flying course conducted at the Academy using T-41 aircraft. The student completes ground and flying training and accumulates approximately 21 hours flying time. Cadets must pass a flight evaluation at the end of the course. The screening process is thorough enough that the AFOQT is not required. After all other requirements are met and upon graduation, the cadet will be qualified for UPT attendance.

Active Duty

Active duty personnel that want to attend UPT must have a commission prior to starting the application process. Qualified individuals

complete the required application package and then forward it to a selection board for processing. The board reviews the applications and selects candidates on merit. Quotas for this category are few in number each year. Unsuccessful applicants may be reviewed by subsequent boards if desired. Successful applicants are notified that they have been chosen to attend and prepare for their new assignment. (14)

Air National Guard

The qualifications required to enter UPT as a member of the ANG may be found in ANGR 51-4, Application Procedures for Undergraduate Pilot Training and Undergraduate Navigator Training. (15) As stated earlier, National Guard Bureau selection guidance to the flying units has been administrative in nature, generally only restating USAF criteria. Actual selection methods vary from unit to unit. Selection may be accomplished by the commander, the deputy commander for operations or a board. Personal interviews are generally conducted to aid in screening applicants. Quite often the individual is an enlisted member of the unit with a known performance record or a local person more likely to remain in the unit for many years.

Once selection is made, a candidate's formal package proceeds through National Guard channels. Those who do not possess a PPL or have not completed a T-41 screening program, report to Hondo for screening. The next step is to complete the commissioning process at the Academy of Military Science (AMS) at McGhee Tyson Air Base, Tenneessee, where a six week officer commissioning course administered for and by the ANG. After graduation from AMS, pilot candidates report to assigned UPT bases to begin flying training.

CHAPTER VI

ATTRITION FROM PILOT TRAINING

In recent years the USAF has been experiencing a serious pilot exodus with losses primarily to the airline industry. Because of Air Force needs to satisfy pilot requirements without an overall increase in total pilot output, the ANG quotas for UPT have been declining. With a reduced number of pilot training slots available, it is essential that the ANG place increased emphasis on selecting the best candidates possible to optimize available training allocations. The Air Force is also concerned with overall UPT attrition rates and is reviewing better ways to screen applicants.

The cost of pilot training continues to increase. For FY 1983 the average cost for each UPT graduate was $334,000, up from $167,000 in 1975 and recent studies indicate that the average cost for each UPT eliminee is approximately $64,000. (16:2) Even though ANG attrition over the past 5 years has averaged 17 percent versus 22 percent for the USAF, the FY 1984 ANG UPT attrition cost $2.3 million. The FY 1985 percentages of ANG UPT graduates recommended for FAR were 73 percent versus 55 percent for the USAF. (9:3) A comparison of UPT attrition is shown in table 2.

UPT ATTRITION RATES (16:5)

	FY85*	FY84	FY83	FY82	FY81
USAF					
Rated (NAV)	3.9%	0%	4.7%	3.7%	4.0%
Academy	16.7%	16.0%	22.3%	14.2%	16.0%
OTS	18.7%	22.4%	28.2%	26.6%	25.7%
Non-rated	19.1%	29.3%	34.5%	32.5%	27.5%
ROTC	28.7%	28.1%	34.6%	26.0%	19.8%
USAF Total	22.1%	23.0%	29.0%	23.7%	20.2%
ANG	14.8%	19.8%	19.7%	12.9%	20.0%
ANG					
* eliminated	20	36	39	19	20
* entered	135	182	198	147	100

*FY 85 data is for 7 out of 8 UPT classes

Table 2

The comparisons show that navigators have had excellent success in UPT, undoubtedly due to their previous training and experience. The high ROTC attrition rates have been attributed to the non-standard FIP program discussed earlier and moves are being made to correct the problem. The ANG success rate consistently has been better than the USAF total. ATC has determined a significant factor in that the attrition rate for those individuals who possess a PPL has been 9 percent in the T-37 phase and 2.3

percent in the T-38 phase compared to those without a PPL of 26 percent and 5.3 percent respectively. (16:3)

ATC classifies attrition causes in six categories as follows: flying deficiency, self initiated elimination (SIE), medical, manifestation of apprehension (MOA), academic and other. (17:15) A brief description of each is appropriate. A flying deficiency would be when a student is unable to properly control the aircraft, such as during landing. A student might quit or SIE for such reasons as losing his/her motivation because the training was perceived as being too difficult or they never really wanted to fly in the first place. Medical attrition usually occurs as a result of the physical examination administered at the beginning of UPT. Problems surface that were previously not reported or diagnosed that disqualify the individual for flying duty. MOA refers to a basic fear of flying. Academic reasons are self explanatory. The other category refers to administrative discharges, non-flying deaths and similar causes.

CHAPTER VII

RECOMMENDATIONS

Air National Guard units enjoy flexibility in selecting participants for UPT. It is unlikely that they will look favorably upon additional selection requirements being levied by the NGB. However, there are several changes or additions that could be made that would not significantly change existing guidelines. To enhance the process of selecting pilot candidates, the following options are available: (1) present method, (2) central selection board, (3) psychomotor testing, (4) service commitment, (5) medical examinations, (6) AFOQT scores and (7) equation evaluation.

Present Method

The first option is not to change the qualification and selection process that is currently in effect. The ANG attrition rate compares favorably against the USAF total rate and suggests that the units are doing a good job of selecting applicants. The only thing to do in this case would oe to place increased emphasis on the topic at commander's conferences and in appropriate correspondence from the NGB.

Central Selection Board

Option two would be to require a central selection board at ANG headquarters to select candidates nominated from the various units. This system is used by AFRES, ROTC, OTS and active duty. It could conceivably eliminate someone being selected for the wrong reason, i.e. the commander's son or the friend of the governor. That is not to say that these people may not be qualified. In many instances they are the best applicant for the school. However, the members of a board are more likely to make an unbiased selection.

Psychomotor Testing

Option three pertains to requiring applicants to accomplish psychomotor testing. The Air Force Human Resources Laboratory (AFHRL) has developed a program to predict candidate success at UPT. It consists of a four hour Basic Attributes Test (BAT) which assesses a candidates information processing capability and personality characteristics. The BAT is a micro-computer and associated hardware that simulates an aircraft control stick. One test is to follow a moving blip on a CRT with a cursor that is controled by the stick. (18:2) Other tests measure risk taking and task saturation. The BAT device costs approximately $37,000 but has virtually no

manpower requirements in that the tests are self administered. (19:1) The ANG should follow the lead of the USAF with regard to the use of the BAT. If the BAT becomes a qualification requirement, a problem will be where to locate them. The initial cost would be prohibitive for each of the 91 ANG flying units to purchase a BAT.

Service Commitment

There is presently no service commitment for students in the event they do not complete UPT. Students are aware that if they quit, they can either look for a non-rated job in the ANG or simply be discharged. Option four would modify the current situation such that students would be required to serve in an enlisted status if they did not successfully complete UPT, therefore increasing the motivation to succeed.

Medical Examinations

Option five requires closer attention be given to medical examinations. Air Training Command has complained in the past of students reporting to UPT who could not pass the physical conducted during the first weeks of UPT. Increased emphasis at unit and NGB level would catch more of these medical problems before the student departs for UPT.

AFOQT Scores

Option six would be to increase the required AFOQT scores in the various areas. Past studies have indicated that requiring higher scores would screen out some students who were destined for failure. (17:5) However, this option would also screen out some individuals who would otherwise be able to complete the program. This happens whenever a qualification requirement is raised; some are disqualified who otherwise would have successfully finished.

Equation Evaluation

Based on records of all who entered UPT from FY 82 through FY 85, an equation was developed that predicted success in pilot training 80 percent of the time and was 99 percent accurate in predicting failure in pilot training. Records were obtained from AFMPC to determine which factors were pertinent in establishing the equation. The records contained extensive personnel data including AFOQT scores, age, sex, marital status, race and degree. A multi-variate regression analysis was conducted on the Honeywell computer at Gunter AFS using the following predictor variables: age, AFOQT

scores, degree, degree level and prior service. (See the appendix for a more detailed description of the analysis).

A commander may apply pertinent data of a pilot candidate to the equation to obtain predictive results for success or failure in pilot training. By using the equation in selecting pilot candidates, the commander may eliminate some who otherwise could succeed at UPT. Conversely, the equation is quite accurate in predicting failure (97 percent) and is useful in that regard. Recommend that the equation be supplied to flying unit commanders to be used as an additional aid in selecting pilot candidates. Because the data may be derived prior to the recruit joining the ANG or prior to any flight screening, the ANG will realize a financial savings by being able to reduce the number of UPT failures.

APPENDIX

The Statistical Package for the Social Sciences (SPSS-9) was used to perform this regression on a Honeywell computer. After several computer runs using different sets of variables, a correlation coefficient of .37725 was derived. The analysis also determined a coefficient for each variable used. The following linear set of predictor variables yielded the best correlation coefficient:

1. AGE
2. AFOQT academic aptitude composite score
3. AFOQT quantitative quantitative composite score
4. AFOQT pilot composite score
5. AFOQT navigator-technical composite score
6. AFOQT verbal score
7. Degree type (0-arts, 1-science)
8. Degree level (0-bachelor, 1-master, 2-doctorate)
9. Prior service (0-no,1-yes)

A test was conducted of 500 randomly selected student records from the four year population sample to determine the accuracy of the regression. As stated in chapter 6, the analysis was accurate 81 percent of the time for

predicting success in UPT and 97 percent accurate for predicting failure. A polynomial regression was then run to verify the results of the linear regression. This revealed a correlation coefficient of .41414. The percentages for predicting success and failure were virtually the same in this case. The values of the coefficients for each variable are important because they make up the equation referenced in chapter 7. (Note that some of the variables have to be squared in a polynomial regression). The variables and respective coefficients are stated in table 3. The equation is written in the following manner:

$$0.0074423 \times (age) - 0.0000181 \times (age^2) + 0.0000390 \times (pilot^2) + 0.0002191 \times (verbal) - 0.0830812 \times (prior\ service) + 0.0401170 \times (degree) + 0.0942842 \times (degree\ level) - 0.0000084 \times (nav^2) + 0.0001030 \times (quant) - 0.0029241 \times (pilot) + 0.0023427 \times (nav) - 0.0000130 \times (verbal^2) - 0.0000030 \times (quant^2) - 0.0019789 \times (acad) + 0.0000134 \times (acad^2) + 1.0384583 = ?$$

After multiplication, addition and subtraction are completed a number will be obtained (denoted by ?). A value greater than 1.5 denotes that the person will successfully complete UPT 81 percent of the time. If a value of 1.5 or less is computed by the above equation, then that individual has a 97 percent chance of failing UPT.

Age	0.0074423
Age (squared)	-0.0000181
AFOQT Pilot (squared)	0.0000390
AFOQT verbal	0.0002191
Prior service	-0.0830812
Degree	0.0401170
Degree level	-0.0942842
AFOQT nav (squared)	-0.0000084
AFOQT quant	0.0001030
AFOQT pilot	-0.0029241
AFOQT nav	0.0023427
AFOQT verbal (squared)	-0.0000130
AFOQT quant (squared)	-0.0000030
AFOQT acad	-0.0019789
AFOQT acad (squared)	0.0000134
Constant	1.0384583

Table 3

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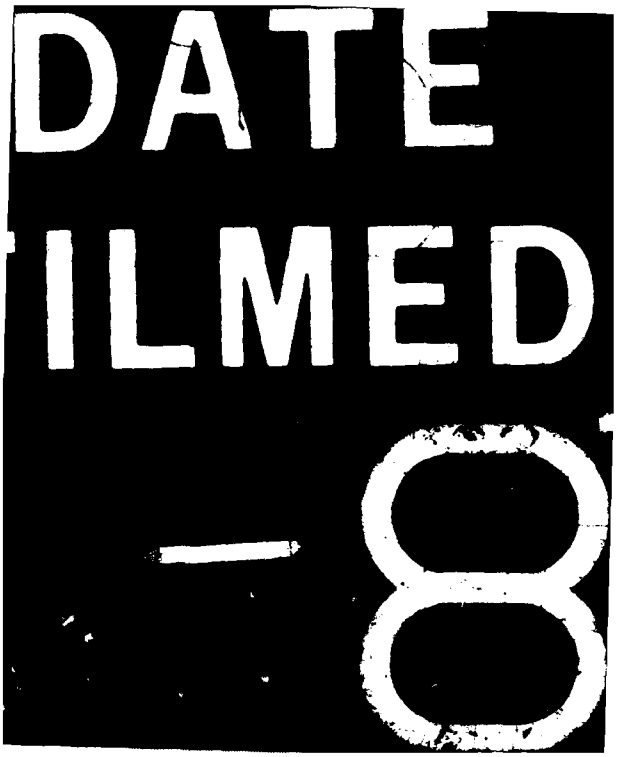
GLOSSARY

AFHRL	Air Force Human Resources Laboratory
AFMPC	Air Force Manpower and Personnel Center
AFOQT	Air Force Officer Qualifying Test
AFRES	Air Force Reserve
AFROTCR	Air Force Reserve Officer Training Corps Regulation
AMS	Academy of Military Sciences
ANG	Air National Guard
ANGR	Air National Guard Regulation
ARF	Air Reserve Forces
ATRB	Advanced Training Recommendation Board
BAT	Basic Attributes Test
CRT	Cathode Ray Tube
FAA	Federal Aviation Administration
FAR	Fighter, Attack, and Reconnaissance
FIP	Flight Instruction Program
FSP	Flight Screening Program
GPA	Grade Point Average
MOA	Manifestation of Apprehension
NGB	National Guard Bureau

OTS	Officer Training School
PIP	Pilot Indoctrination Program
PPL	Private Pilot's License
ROTC	Reserve Officers Training Corps
SIE	Self Initiated Elimination
SUPT	Specialized Undergraduate Pilot Training
TTB	Tanker, Transport and Bomber
UPT	Undergraduate Pilot Training
USAF	United States Air Force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